

In the Claims

Please **SUBSTITUTE** the following amended claims for the pending claims with the same number (a marked up copy of the prior pending claim with all changes shown is supplied in the appendix):

1. (Once Amended) An optical inspection system for inspecting the surface of a substrate, comprising:
 - a light source for emitting an incident light beam along an optical axis;
 - a first set of optical elements arranged for separating the incident light beam into a plurality of light beams, directing the plurality of light beams to intersect with the surface of the substrate, focusing the plurality of light beams to a plurality of scanning spots on the surface of the substrate; and
 - a light detector arrangement including individual light detectors that correspond to individual ones of a plurality of transmitted light beams caused by the intersection of the plurality of light beams with the surface of the substrate, the light detectors being arranged for sensing the light intensity of the transmitted light.

22. (Once Amended) A method of inspecting a surface of a substrate, comprising:
 - transporting the substrate in a first direction;
 - providing a first light beam;
 - separating the first light beam into a plurality of light beams;
 - focusing the plurality of light beams to a plurality of spatially distinct spots on the surface of the substrate;
 - sweeping the plurality of light beams so as to move the plurality of spatially distinct spots along the surface of the substrate in a second direction;
 - detecting the intensity of each of the plurality of light beams after their intersection with the surface of the substrate;
 - generating a plurality of scan signals corresponding to the detected plurality of light beams; and
 - comparing the scan signals with a predetermined reference signal to determine characteristics about the surface of the substrate.

Please ADD claims 24-46:

24. (New) An optical inspection system for inspecting the surface of a reticle, comprising:
a light source for emitting an incident light beam along an optical axis;
a first set of optical elements arranged for separating the incident light beam into a plurality of light beams, directing the plurality of light beams to intersect with the surface of the reticle, focusing the plurality of light beams to a plurality of scanning spots on the surface of the reticle; and
a light detector arrangement including individual light detectors that correspond to individual ones of a plurality of reflected or transmitted light beams caused by the intersection of the plurality of light beams with the surface of the reticle, the light detectors being arranged for sensing the light intensity of either the reflected or transmitted light.
25. (New) An optical inspection system for inspecting the surface of a substrate, comprising:
a light source for emitting an incident light beam along an optical axis;
a first set of optical elements arranged for separating the incident light beam into a plurality of light beams, directing the plurality of light beams to intersect with the surface of the substrate, focusing the plurality of light beams to a plurality of scanning spots on the surface of the substrate; and
a light detector arrangement including individual light detectors that correspond to individual ones of a plurality of reflected and transmitted light beams caused by the intersection of the plurality of light beams with the surface of the substrate, the light detectors being arranged for sensing the light intensity of the reflected and transmitted light.
26. (New) The optical inspection system as recited in claim 25 wherein the optical inspection system is configured to perform transmitted light inspection where the amount of light transmitted through the substrate is measured via the light detector arrangement.
27. (New) The optical inspection system as recited in claim 25 wherein the optical inspection system is configured to perform reflected light inspection where the amount of light reflected from the substrate is measured via the light detector arrangement.

28. (New) The optical inspection system as recited in claim 25 wherein the optical inspection system is configured to perform simultaneous transmitted and reflected light inspection where the amount of light transmitted through the substrate and the amount of light reflected from the substrate is measured via the light detector arrangement.
29. (New) The system as recited in claim 25 wherein the substrate is a mask, reticle or semiconductor wafer.
30. (New) The system as recited in claim 1 wherein the substrate is a mask, reticle or semiconductor wafer.
31. (New) The system as recited in claim 22 wherein the substrate is a mask, reticle or semiconductor wafer.
32. (New) The system as recited in claim 23 wherein the substrate is a mask, reticle or semiconductor wafer.
33. (New) The system as recited in claim 1 wherein the light detector arrangement further includes individual light detectors that correspond to individual ones of a plurality of reflected light beams caused by the intersection of the plurality of light beams with the surface of the substrate, the light detectors being arranged for sensing the light intensity of the reflected light.
34. (New) The method as recited in claim 22 wherein the method is used to inspect for defects on the surface of the substrate.
35. (New) The method as recited in claim 34 wherein the defect inspection includes die to die inspection mode where two areas of the substrate having identical features are compared with respect to each other and any substantial discrepancy is flagged as a defect.
36. (New) The method as recited in claim 34 wherein the defect inspection includes die to database inspection mode where the substrate is compared with an image stored in a database and any substantial discrepancy is flagged as a defect.

37. (New) The method as recited in claim 34 wherein the defect inspection includes simultaneous reflected and transmitted inspection mode where the light reflected from the substrate is compared with the light transmitted through the substrate.

38. (New) An optical inspection system for inspecting the surface of a substrate, comprising:

a light source for emitting an incident light beam along an optical axis;

a first set of optical elements arranged for separating the incident light beam into a plurality of light beams, directing the plurality of light beams to intersect with the surface of the substrate, focusing the plurality of light beams to a plurality of scanning spots on the surface of the substrate;

a light detector arrangement including individual light detectors that correspond to individual ones of a plurality of reflected or transmitted light beams caused by the intersection of the plurality of light beams with the surface of the substrate, the light detectors being arranged for sensing the light intensity of either the reflected or transmitted light; and

a control system configured to construct a virtual image of the surface of the substrate based on the detected light and to compare the virtual image to a reference image so as to determine characteristics associated with the surface of the substrate.

39. (New) The system as recited in claim 38 wherein the reference image is stored in a database.

40. (New) The system as recited in claim 38 wherein the reference image is a previously constructed image.

41. (New) An optical inspection system for inspecting a substrate, comprising:

a light source for emitting a light beam;

a first optical arrangement for separating the light beam into a plurality of spatially distinct light beams;

a second optical arrangement for collecting either a plurality of reflected light beams or a plurality of transmitted light beams caused by the intersection of the plurality of light beams with the surface of the substrate; and

a light detector arrangement including individual light detectors that correspond to individual ones of the plurality of reflected or transmitted light beams, the light detectors being

arranged for sensing the light intensity of either the reflected or transmitted light.

42. (New) The system as recited in claim 41 wherein the first optical arrangement includes a diffraction grating or beam splitter cube.

43. (New) The system as recited in claim 42 wherein the second optical arrangement includes a prism for directing individual ones of the plurality of reflected or transmitted beams to individual light detectors.

44. (New) The system as recited in claim 43 wherein the prism includes a facet for each one of the individual reflected or transmitted beams.

45. (New) The system as recited in claim 43 wherein the second optical arrangement further includes a first lens for collecting the plurality of reflected or transmitted beams and a spherical aberration lens for directing the collected plurality of reflected or transmitted beams to the prism.

46. (New) The system as recited in claim 42 further including an objective lens for focusing the plurality of light beams to a plurality of scanning spots on the surface of the substrate and a telescope for varying the size of the scanning spots on the surface of the substrate.